

Bellwork: 4/8/13

Solve the following rational equation:

$$1) \frac{3}{x^2+4x} + \frac{2x}{x^2+2x-8} = \frac{4(x+4)}{x^2-2x}$$

LCD: $x(x+4)(x-2)$

Restrictions:

$$x=0 \quad x+4=0$$

$$x \neq 0 \quad x \neq -4$$

$$x-2=0 \quad x \neq 2$$

$$\frac{x(x+4)\cancel{(x+4)}(x-2)}{\cancel{(x-2)}x(x+4)} \cdot \frac{x(x-2)}{(x+4)} = \frac{4(x+4)}{(x+4)}$$

$$3(x-2) + 2x = 4(x+4)$$

$$3x-6+2x=4x+16$$

$$5x-6=4x+16$$

$$\begin{array}{r} -4x \\ -4x \end{array}$$

$$\begin{array}{r} x-6=16 \\ +6 \quad +6 \end{array}$$

$$x=22$$

$$x \neq 0, 2, -4$$

Example 4:

$$\frac{x}{x-1} + \frac{x}{1} = \frac{4x-3}{x-1}$$

LCD: $(x-1)$

Restrictions:

$$x-1=0$$

$$x \neq 1$$

$$\frac{x}{(x-1)} + \frac{x(x-1)}{1(x-1)} = \frac{4x-3}{(x-1)}$$

$$x + x(x-1) = 4x-3$$

$$x + x^2 - x = 4x-3$$

$$x^2 = 4x-3$$

*if have $x^2 \rightarrow$ must = 0 and factor!

$$x^2 - 4x + 3 = 0$$

$$x^2 - 4x + 3 = 0$$

$$(x-3)(x-1) = 0$$

$$x-3=0 \quad x-1=0$$

$$x=3$$

$$x=1$$

A simple rational equation in for which each side of the equation is a *single rational expression* can be solved by using Cross Multiplication.

Example 5:

$$\frac{2(x+1)}{(x-3)} = \frac{3(x-3)}{(x+1)}$$

$$LCD: (x-3)(x+1)$$

Restrictions:

$$x-3=0 \quad x+1=0$$

$$x \neq 3, -1$$

$$2(x+1) = 3(x-3)$$

$$\begin{array}{r} 2x+2 = 3x-9 \\ +9 \quad \quad +9 \end{array}$$

$$\begin{array}{r} 2x+11 = 3x \\ -2x \quad \quad -2x \\ \hline 11 = x \end{array}$$

Homework: packet page 6 - all

